

REMARKS

In response to the Examiner's claim rejections under 35 USC 112, Claim 20, 26 and 27. As such, it is respectfully submitted that the currently presented claims are cured of all formal defects.

Claims 12 and 22-25 have been rejected under 35 USC 103(a) as being unpatentable over Shepler et al. Claims 12 and 22-25 have been rejected under 35 USC 103(a) as being unpatentable over Denzinger et al. Claims 12 and 22-25 also have been rejected under 35 USC 103(a) as being unpatentable over Kroner et al. Claims 12, 21, 23, 26 and 27 have been rejected under 35 USC 103(a) as being unpatentable over Murakami et al. Claims 12, 22, 26 and 27 have been rejected under 35 USC 103(a) as being obvious over Otoi et al. Applicants respectfully traverse these grounds of rejection and urge reconsideration in light of the following comments.

As explained previously, the instant invention is directed to surface treatment chemicals which form a polymerization reaction product on the surface of a fiber and comprises a water-soluble organic substance selected from the group consisting of at least one of a protein, protein derivative and polysaccharide, having an average molecular weight of from 100 to 20,000, a polymerization initiator and a reactive modifier which is at least one member selected from the group consisting of polyethylene glycol diacrylate, polyethylene glycol dimethacrylate, bisphenol A polyethylene glycol diacrylate, bisphenol A polyethylene glycol dimethacrylate, bisphenol S polyethylene glycol dimethacrylate, polyethylene glycol diglycidyl ether and the compound of Formula 1 which contains an aziridine group.

The reactive modifier of the present invention reacts with polymer chains of the water-soluble organic compound and, simultaneously therewith, the reactive modifier polymerizes with itself to form a macromolecule that covers the water-soluble organic compound and thereby exhibits superior durability, hygroscopicity, anti-electrostaticity, etc.

The Shepler et al reference discloses a copolymer which is formed in the reaction of a synthetic emulsion and a protein. The reactive synthetic emulsion is an interpolymer of (1) an ester of an α,β -unsaturated carboxylic acid, (2) an ester of an α,β -unsaturated carboxylic acid in which the ester portion contains an oxirane ring, (3) a monoethylenically unsaturated compound containing a vinyl group and (4) an α,β -unsaturated mono- or di-carboxylic acid or a salt thereof. Although this reference does disclose, as pointed out by the Examiner, various acrylates and methacrylates in column 4, lines 9-24, the specific reaction modifiers now required in the present claims are not shown nor suggested. As such, it is respectfully submitted that the currently claimed invention clearly is patentably distinguishable over this reference.

The Denzinger et al et al reference discloses water-soluble or water-dispersible graft polymers of proteins which are obtained by free radical-initiated polymerization of a monomer or a monomer mixture comprising (a) from 20-100% by weight of acrylic acid or methacrylic acid or a mixture thereof or alkali metal, alkaline earth metal or ammonium salts thereof, (b) from 0-80% by weight of other monoethylenically unsaturated monomers which can be copolymerized with the monomers (a) and (c) from 0 to 5% by weight of monomers containing at least two ethylenically unsaturated, non-conjugated double bonds in the molecules, in the presence of proteins. Although this reference discloses in column 2, lines 10-51, various acrylates and methacrylates that can be used as monomers, there is no disclosure in this reference regarding the specific reactive modifier required by currently presented Claim 12. As such, it is respectfully submitted that Claim 12 is clearly patentably distinguishable over this reference.

The Kroner et al reference discloses water-resistant films and coatings which are prepared by treating films or coatings of water-soluble or dispersible grafted polymers prepared with monoethylenically unsaturated monomers at above

40% C and/or with at least one compound which is a hardener for proteins.

These water-resistant films and coatings are disclosed as being useful as compostable packaging materials or as outer layers of diapers. Examples of monoethylenically unsaturated carboxylic acids are disclosed as being acrylic acid, methacrylic acid and esters thereof with monohydric or polyhydric alcohols. However, as with the previously discussed references, there is no specific disclosure of the reaction modifiers required by the present claims. As such, it is respectfully submitted that the currently presented claims clearly are patentably distinguishable over the references cited by the Examiner.

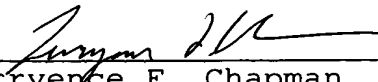
In addition to the distinctions pointed out above, the Shepler reference requires the presence of an ester of an " α,β -unsaturated carboxylic acid", which is not required for the present invention. Moreover, the compounds recited in Shepler et al do not exhibit the polymerization effect of the present invention. The Kroner et al and Denzinger et al references also do not disclose the specific reactive modifier of the present invention and the effects associated therewith. As such, the present invention clearly is distinguishable thereover.

The Murakami et al and Otoi et al references have been cited by the Examiner as showing the use of an aziridine compound in combination with proteins and other chemicals to perform surface treatment on fibers. However, the currently claimed invention expressly excludes an aziridine compound therefrom and, as such, the presently claimed invention is patentably distinguishable thereover. Moreover, the Murakami et al and Otoi et al references do not disclose the effect of the present invention in which a reaction occurs with a water-soluble organic compound and the reactive modifier also reacts with itself to form a macromolecule that covers the water-soluble organic compound. Therefore, it is respectfully submitted that the presently claimed invention is clearly

patentably distinguishable over the prior art cited by the Examiner.

The Examiner is respectfully requested to reconsider the present application and to pass it to issue.

Respectfully submitted,


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